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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/608,349	06/27/2003	Hsien-Kuang Chiu	TSM02-1300	8748

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EXAMINER	
GOUDREAU, GEORGE A	

ART UNIT	PAPER NUMBER
1763	

DATE MAILED: 07/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/608,349	CHIU ET AL.	
	Examiner	Art Unit	
	George A. Goudreau	1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *(6-27-03' to 2-19-04')*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8,10,11,13-17 and 20-22* is/are rejected.

7)☒ Claim(s) *9,12,18 and 19* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

George A. Goudreau
GEORGE GOUDREAU
PRIMARY EXAMINER

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-2, 4, 6-8, 11, 15, 17, and 20-21 are rejected under 35 U.S.C. 102(e) as being anticipated by Rotondaro et. al. (6,656,852).

Rotondaro et. al. disclose a process for fabricating a FET which is comprised of the following steps:

-A FOX layer (203) is formed onto the surface of a Si wafer (201).;

-A high dielectric layer (205) is formed onto the surface of the wafer. The high dielectric layer may be comprised of materials such as Ta2O5.;

-A polysi layer (207) is formed onto the surface of the high dielectric layer.;

-The polysi layer is patterned.; and

-The high dielectric layer is patterned in a two step etching process using the patterned polysi layer as an etch mask. The first etch step is used to etch the bulk of the thickness of the high dielectric layer. The first etch step may be conducted using a plasma etching process or a wet etching process. The wet etching process may employ a wet etchant, which is comprised of any of HF and/or H2SO4.

This is discussed specifically in columns 2-5; and discussed in general in columns 1-8. This is shown in figures 1-4.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 4, and 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over the reference as applied in paragraph 2 above.

The reference as applied in paragraph 2 above fail to disclose the following aspects of applicant's claimed invention:

-the methods, which are claimed by the applicant for depositing the high K dielectric layer;

-the specific etch gasses which are claimed by the applicant for the rie etching step; and

-the specific etch process parameters which are claimed by the applicant

It would have been obvious to one skilled in the art to employ any of a variety of different processes to form the high K dielectric layer in the process taught above including those processes, which are specifically claimed by the applicant based upon the following. The usage of the specific processes, which are claimed by the applicant to form the high K dielectric layer, is conventional or at least well known in the semiconductor processing arts. (The examiner takes official notice in this regard.) Further, the specific usage of the processes which are taught above to form the high K dielectric layer in the process taught above simply represents the usage of an alternative, and at least equivalent means for forming the high K layer in the process taught above to the specific usage of other means for doing such.

It would have been obvious to one skilled in the art to employ a rie etch step to conduct the dry etching step in the process taught above based upon the following. The usage of a rie etch step to pattern a high dielectric layer is conventional or at least well known in the etching arts. (The examiner takes official notice in this regard.) Further, this would simply represent the usage of an alternative, and at least equivalent means for conducting the dry etching step in the process taught above to the specific usage of other such means for doing such.

It would have been obvious to one skilled in the art to employ a plasma etchant which is comprised of any of the gasses which are claimed by the applicant to conduct the dry etching step in the process taught above based upon the following. The usage of the specific etch gasses which are claimed by the applicant to dry etch a high

dielectric layer is conventional or at least well known in the etching arts. (The examiner takes official notice in this regard.) Further, this simply represents the usage of an alternative, and at least equivalent means for conducting the dry etching step in the process taught above to the specific usage of other such means for doing such.

It would have been prima facie obvious to employ any of a variety of different etch process parameters in the etching process taught above including those which are specifically claimed by the applicant. These are all well known variables in the etching art, which are known to affect both the rate and the quality of the etching process. Further, the selection of particular values for these variables would not necessitate any undo experimentation, which would have been indicative of unexpected results.

Alternatively, it would have been obvious to one skilled in the art to employ the specific etch process parameters which are claimed by the applicant in the etching process taught above based upon In re Aller as cited below.

"Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F. 2d 454, 105 USPQ 233, 235 (CCPA).

Further, all of the specific process parameters which are claimed by the applicant are results effective variables whose values are known to effect both the rate, and the quality of the etching process.

6. Claims 3, 10, 16, and 22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

-In line 2 of claim 3, the word "spaccrs" should read "spacers".; and

-The wording used in lines 2-3 of claims 10, 16, and 22 is confusing, and should be reworded. (i.e.-How does one ash a high dielectric layer to remove the remainder of the high dielectric layer not etched in the first etch step? Also, how does the second etch step etch the high dielectric layer after the ashing step when the ashing step has already removed the portion of the high dielectric layer remaining after the first etch step? In this regard, the wording used in these claims contradicts the claims upon which these claims are based.)

7. Claims 9, 12, and 18-19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

9. Any inquiry concerning this communication should be directed to examiner George A. Goudreau at telephone number (571)-272-1434.

George A. Goudreau

George A. Goudreau
Primary Examiner
Art Unit 1763